

**ABSTRACT**

The present invention relates to a high temperature proton-conducting polymer membrane, a preparation method thereof, a membrane-electrode assembly  
5 using the same and a fuel cell containing the same. More particularly, it relates to a proton-conducting polymer membrane enabling fuel cell operation under high temperature and normal pressure condition, wherein sulfoalkyl or sulfoaryl groups are introduced between layers of metal phosphate and cation exchange groups are present in side chains, a preparation method thereof and a membrane-electrode  
10 assembly using the proton exchange membrane and a fuel cell containing the same.

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